

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
7 August 2003 (07.08.2003)

PCT

(10) International Publication Number
WO 03/064473 A3

(51) International Patent Classification⁷: **C07K 16/10**,
G01N 33/576, C07K 16/42

(21) International Application Number: PCT/IT03/00032

(22) International Filing Date: 29 January 2003 (29.01.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
RM2002A000049 30 January 2002 (30.01.2002) IT

(71) Applicant and

(72) Inventor: **BURIONI, Roberto** [IT/IT]; Piazza Ferrari, 22,
I-47900 Rimini (IT).

(74) Agents: **CAPASSO, Olga** et al.; De Simone & Partners
S.p.A., Via V. Bellini, 20, I-00198 Roma (IT).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,
SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

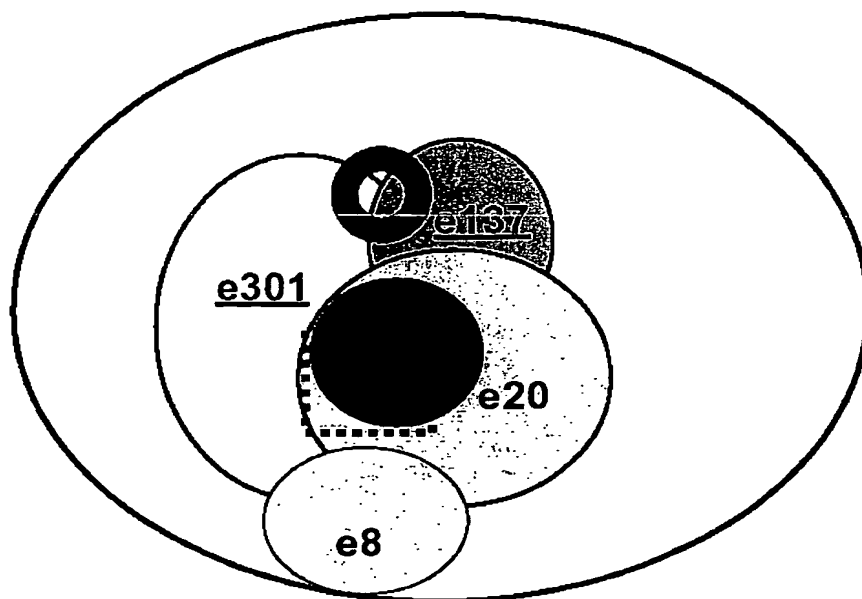
Published:

— with international search report

(88) Date of publication of the international search report:
24 December 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **HUMAN MONOCLONAL ANTIBODY FAB FRAGMENTS DIRECTED AGAINST HCV E2 GLYCOPROTEIN AND ENDOWED WITH IN VITRO NEUTRALIZING ACTIVITY**



(57) Abstract: The invention refers to a human antibody, or its functional fragments, directed against the HCV E2 glycoprotein, able to have a neutralizing activity in vivo; a composition for anti-HCV therapy comprising in a therapeutically effective amount the antibody; a composition for topical use in gel, creme, ointment and ovule formulations; the use of the antibody for validating anti-HCV vaccines.

WO 03/064473 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IT/00032

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K16/10 G01N33/576 C07K16/42

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, WPI Data, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 00 05266 A (CONNEX GES ZUR OPTIMIERUNG VON ;REITER CHRISTIAN (DE); DESGRANGES) 3 February 2000 (2000-02-03) "ANTI HEPATITIS C VIRUS ANTIBODY AND USES THEREOF " abstract page 4, line 11 - line 21 page 13, paragraph 1 claims 1-21</p> <p style="text-align: center;">--- -/--</p>	1,4-11

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

6 August 2003

Date of mailing of the international search report

22/08/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Niebuhr-Ebel, K

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT/00032

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>BURIONI ROBERTO ET AL: "Nonneutralizing human antibody fragments against hepatitis C virus E2 glycoprotein modulate neutralization of binding activity of human recombinant Fabs."</p> <p>VIROLOGY, vol. 288, no. 1, 15 September 2001 (2001-09-15), pages 29-35, XP002250414 ISSN: 0042-6822 abstract page 29, left-hand column, last line -page 30, paragraph 2; figure 1</p>	2,3
X	<p>ALLANDER T ET AL: "RECOMBINANT HUMAN MONOCLONAL ANTIBODIES AGAINST DIFFERENT CONFORMATIONAL EPITOPES OF THE E2 ENVELOPE GLYCOPROTEIN OF HEPATITIS C VIRUS THAT INHIBIT ITS INTERACTION WITH CD81"</p> <p>JOURNAL OF GENERAL VIROLOGY, SOCIETY FOR GENERAL MICROBIOLOGY, READING, GB, vol. 81, 2000, pages 2451-2459, XP002939743 ISSN: 0022-1317 page 2452, left-hand column, paragraph 3 - paragraph 4 page 2456, left-hand column, line 12 - line 28 page 2457, left-hand column, line 32 - line 42</p>	1
P,X	<p>WO 02 055560 A (EMERSON SUZANNE U ;ALTER HARVEY J (US); GOUVERNMENT OF THE UNITED) 18 July 2002 (2002-07-18) "MONOCLONAL ANTIBODIES SPECIFIC FOR THE E2 GLYCOPROTEIN OF HEPATITIS C VIRUS AND THEIR USE IN THE DIAGNOSIS, TREATMENT, AND PREVENTION OF HEPATITIS C " the whole document</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	1-11

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB93/00032

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>ROSA D ET AL: "A QUANTITATIVE TEST TO ESTIMATE NEUTRALIZING ANTIBODIES TO THE HEPATITIS C VIRUS: CYTOFLUORIMETRIC ASSESSMENT OF ENVELOPE GLYCOPROTEIN 2 BINDING TO TARGET CELLS"</p> <p>PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US,</p> <p>vol. 93, no. 3, 1 March 1996 (1996-03-01), pages 1759-1763, XP000615446</p> <p>ISSN: 0027-8424</p> <p>abstract</p> <p>page 1759, right-hand column, paragraph 1 - paragraph 2</p> <p>page 1761, left-hand column, last paragraph -right-hand column, paragraph 2</p> <p>-----</p>	1-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 03/00032

Patent document cited in search report	Classification date	Patent family member(s)	Publication date
WO 0005266	A	03-02-2000	
		AU 5285899 A	14-02-2000
		CA 2339045 A1	03-02-2000
		CN 1309664 T	22-08-2001
		WO 0005266 A1	03-02-2000
		EP 1097172 A1	09-05-2001
		JP 2002521391 T	16-07-2002
WO 02055560	A	18-07-2002	
		CA 2429946 A1	18-07-2002
		WO 02055560 A2	18-07-2002